UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,534	11/29/2005	Hubert Spreitzer	09931-0009-US	4132

23416 7590 04/15/2008

CONNOLLY BOVE LODGE & HUTZ, LLP
P O BOX 2207
WILMINGTON, DE 19899

EXAMINER	
HEINCER, LIAM J	

ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
04/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,534	SPREITZER ET AL.	
	Examiner	Art Unit	
	Liam J. Heincer	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-13 and 15-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 11-13, and 15-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (US Pat. 5,763,539) in view of Hsich (US Pat. 5,876,865) and as evidenced by Taylor et al., Substituted PPV's for Blue Light.

Considering Claims 1 and 7: Stern et al. teaches a process for preparing poly(arlyenevinylenes) from a halomethylsulfinylmethylarylene (Formula I) by base induced dehalagonation (scheme I, col. 7), where the reaction is carried out in the presence of a compound of Formula I (Formula I). Stern et al. teaches using mixtures of different monomers (6:60-63).

Stern et al. does not teach the claimed mol%. However, it is well known in the art to optimize result effective variables such as mol%. See MPEP §2144.05. It would have been obvious to a person having ordinary skill in the art at the time of the invention

to have optimized the mol% of the monomers of formula I, and the motivation to do so would have been, as Taylor et al. suggests, to give the desired lower molecular weight (Section 2.1). Stern et al. teaches that reducing the molecular weight would be desired to prevent precipitation of the polymer (3:8-10).

Stern et al. does not teach the monomers as being bis(halomethyl)arylenes. However, Hsich teaches forming a poly(phenylene-vinylene) from bis(halomethyl)arylenes (18:38-42). Stern et al. and Hsich are combinable as they are concerned with the same field of endeavor, namely base induced polymerization processes for the production of poly(phenylene-vinylene). It would have been obvious to a person having ordinary skill in the art at the time of invention to have used the bis(halomethyl)arylene monomers of Hsich in the process of Stern et al., and the motivation to do so would have been, as Hsich suggests, they are functionally equivalent to the monomers of Stern et al. (4:51-59).

Considering Claim 2: Stern et al. teaches using a cholrine, bromine or iodine halogen (3:22-23).

Considering Claim 3: Stern et al. teaches carrying out the polymerization in a solvent that can be an ether, alcohol (7:66-67), or DMSO (16:8-10).

Considering Claim 4: Stern et al. teaches the reaction as occurring at a concentration of 0.005 to 5 mol/L (13:59-61).

Considering Claim 5: Stern et al. teaches the base as being an alkali metal hydroxide or an alkali metal alkoxide (7:18-26).

Considering Claim 6: Stern et al. teaches the base as being present in the range of 1 to 10 equivalents in comparison to the monomers (7:36-40).

Considering Claims 8 and 9: Stern et al. teaches using monomers of instant Formula XXIV or XXV (Formula I). R^1 and R^2 are explicitly defined as capable of being a benzyl group (3:26-30) and L is explicitly defined as capable of being a chlorine of bromine atom (3:23-24).

Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (US Pat. 5,763,539) as evidenced by Taylor et al., Substituted PPV's for Blue Light.

Considering Claim 11: Stern et al. teaches a process for preparing poly(arlyenevinylenes) from a halomethylsulfinylmethylarylene (Figure I) by base induced dehalagonation (scheme I), where the reaction is carried out in the presence of a compound of Formula I (Formula I). Stern et al. teaches using mixtures of different monomers (6:60-63). Stern et al. does explicitly teach the end units of Formulas Ia and Ib. However, since Stern et al. teaches all the claimed process steps in the product by process claim, it will necessarily produce a product as shown in the claimed formulas.

Stern et al. does not teach the claimed mol%. However, it is well known in the art to optimize result effective variables such as mol%. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have optimized the mol% of the monomers of formula I, and the motivation to do so would have been, as Taylor et al. suggests, to give the desired lower molecular weight (Section 2.1).

Stern et al. does not teach the monomers as being bis(halomethyl)arylenes. However, Hsich teaches forming a poly(phenylene-vinylene) from bis(halomethyl)arylenes (18:38-42). Stern et al. and Hsich are combinable as they are concerned with the same field of endeavor, namely base induced polymerization processes for the production of poly(phenylene-vinylene). It would have been obvious to a person having ordinary skill in the art at the time of invention to have used the bis(halomethyl)arylene monomers of Hsich in the process of Stern et al., and the motivation to do so would have been, as Hsich suggests, they are functionally equivalent to the monomers of Stern et al. (4:51-59).

Considering Claims 12 and 13: Stern et al. teaches the monomers as being incorporated into a polyarylenevinylene (2:67) that can be a homopolymer or copolymer (6:60-62).

Considering Claim 15: Stern et al. teaches a device comprising the poly(arylenevinylene), and two contace layers, one of which has a positive charge relative to the other (1:23-37).

Considering Claims 16 and 17: Stern et al. teaches using the polymer in a polymeric light emitting diode (1:12-15).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (US Pat. 5,763,539) as evidenced by Taylor et al., Substituted PPV's for Blue Light as applied to claim 11 above, and further in view of Burroughes et al. (US 2003/0124341).

Considering Claim 18: Stern et al. teaches the composition of claim 11 as shown above.

Stern et al. does not teach using the polymer in one of the claimed devices. However, Burroughes et al. teaches using a poly(arylenevinylene) (¶0041) in an organic thin-film transistor or an organic solar cell (¶0010). Stern et al. and Burroughes et al. are combinable as they are concerned with the same field of endeavor, namely poly(arylenevinylenes). It would have been obvious to a person having ordinary skill in the art at the time of the invention to have made a device as in Burroughes et al. from the composition of Stern et al., and the motivation to do so would have been, as Burroughes et al. suggests, conjugated semiconducters provide superior devices (¶0038).

Response to Arguments

Applicant's arguments filed January 24, 2008 have been fully considered but they are not persuasive, because:

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the solubility of the polymer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Additoinally, Stern et al. teaches the polymers made in the process as being essentially soluble (3:33-55).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Liam J. Heincer whose telephone number is 571-270-3297. The examiner can normally be reached on Monday thru Friday 7:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/ LJH
Supervisory Patent Examiner, Art Unit 1796 March 28, 2008
11-Apr-08